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| <p>ORAU Team Dose Reconstruction Project for NIOSH</p> <p>Development of the Fernald Environmental Management Project Site Profile</p> | <p>Document Number: ORAUT-PRES-0026 Effective Date: 08/30/2004 Revision No.: 00 Controlled Copy No.: _____ Page 1 of 36</p> |
| <p>Subject Expert: William E. Murray</p> <p>Document Owner</p> <p>Approval: <u>Signature on File</u> Date: <u>08/19/2004</u> Judson L. Kenoyer, Task 3 Manager</p> <p>Concurrence: <u>Signature on File</u> Date: <u>08/30/2004</u> Richard E. Toohey, Project Director</p> | <p>Supersedes:</p> <p style="text-align: center;">None</p> |

RECORD OF ISSUE/REVISIONS

| ISSUE AUTHORIZATION DATE | EFFECTIVE DATE | REV. NO. | DESCRIPTION |
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| 08/30/2004 | 08/30/2004 | 00 | Slides used for presentation of the Fernald Environmental Management Project Site Profile to the Fernald Atomic Trades and Labor Council and Guards Union on June 29, 2004. Initiated by William E. Murray. |

Development of the Fernald Environmental Management Project Site Profile

Bill Murray
Oak Ridge Associated
Universities Team

June 29, 2004

Energy Employees
Occupational Illness
Compensation Program
Act (EEOICPA)

Department of Labor

Department of Health
and Human Services – NIOSH

Oak Ridge Associated
Universities Team

Dose

Reconstruction

Purpose of Meeting

- We will discuss the Fernald Environmental Management Project (FEMP) Site Profile.
- We will describe how the Site Profile is used.
- We are asking you for your suggestions and information.
- We want to document your concerns and issues.
- We want to answer your questions.

ORAU Team Program Goals

- We will protect the claimant's privacy.
- We want to process claims accurately, fairly and efficiently.
- We want to work with you to get your input and comments on our work on this project.
- We will avoid conflicts of interest.

Occupational Radiation Dose

Occupational Medical Dose

Occupational Environmental Dose

Internal Dose

External Dose

Fernald Environmental Management Project (FEMP) Site Profile

The Fernald Environmental Management Project Site Profile document contains information about the activities and practices here, focusing on radiation protection practices and measurement.

The Site Profile is based on a careful review of site-related records, and was prepared by a team of experienced radiation protection specialists.

FEMP Site Profile

The Site Profile provides information on:

- Radiation sources
- The radiation dosimetry program
- Potential radiation exposures

Site Profiles

- The Site Profiles contain six Technical Basis Documents (TBDs) that focus on specific topic areas.
- The Site Profile and the TBDs provide technical guidance to prepare claimant dose reconstructions.

Site Profiles

- These are “living” documents that can be revised when additional information is obtained.
- These documents assist NIOSH in completing the work required for each claimant’s dose reconstruction.

Site Profiles

We use the word “facility” as a general term for an area, building, or group of buildings that had a specific purpose.

“Facility” does not necessarily mean or refer to an “atomic weapons employer facility” or “Department of Energy facility” as defined in the Act.

The Site Profile Supports Dose Reconstruction

The Site Profile:

- Is used by health physicists to reconstruct radiation doses.
- Provides site-specific technical information.
- Minimizes the need to interpret data.
- Is a “living” document.

General Information

- NIOSH wants your input. You should send your comments directly to NIOSH.
- We are meeting with union representatives at all sites to encourage input.
- You can see all completed Site Profiles at <http://www.cdc.gov/niosh/ocas/ocastbds.html>.

Developing the FEMP Site Profile

- The TBDs are written by subject experts.
- Every TBD is reviewed by NIOSH.
- Every TBD must be approved by NIOSH.

Developing the FEMP Site Profile

- The FEMP Site Profile team was established in May 2003.
- The Team Leader is Mel Chew; the original Team Leader was Terry Kuykendall.
- The individual TBDs (sections of the Site Profile) were written by different authors.
- The complete Site Profile is approved.

Contents of the FEMP Site Profile

- Purpose and Scope
- Site Description
- Occupational Medical Dose
- Occupational Environmental Dose
- Occupational Internal Dosimetry
- Occupational External Dose

Purpose and Scope

The Site Profile:

- Is used to reconstruct radiation doses to workers at the FEMP.
- Covers the time from site construction (begun in 1951) to the present.
- Uses claimant-favorable assumptions.

FEMP Site Description

- Briefly describes the facilities and processes used at the FEMP, formerly the Feed Materials Production Plant (FMPC), over the years.
- Lists the radioactive materials and radiation sources present.
- Identifies potential internal exposures.
- Identifies potential external exposures.

FEMP Site Description (Cont.)

- Production of high-purity uranium products.
- Long-term storage of thorium metals.
- Waste processing and management.
- Remediation of site.
- Significant radionuclides present: normal, enriched and depleted uranium; thorium; radon; and thoron.

Occupational Medical Dose (X-rays)

- How often were chest X-rays taken?
- What X-ray equipment and techniques were used?
- What were the radiation doses to specific organs?
- How should this information be used to reconstruct radiation doses?

Occupational X-ray Dose

(Cont.)

- Only X-rays required by the employer are included.
- The X-ray equipment changed over time.
- Older equipment gave off more X-ray radiation resulting in higher doses.
- The X-ray machine doses are not included in worker DOE dose records.

Occupational Environmental Dose (for workers who were not monitored)

Persons who were not radiation workers (not badged) could be exposed to radiation from:

- Radioactive materials in the air.
- Radiation sources in buildings.
- Radioactive materials in the work environment.

Occupational Environmental Dose (Cont.)

The environmental dose includes the radiation dose inside the body from radioactive materials released into the air on the site that the worker breathes. The radioactive materials released were:

- Enriched, normal, and depleted uranium
- Natural thorium
- Radon
- Thoron

Occupational Environmental Dose (Cont.)

The environmental dose includes the external radiation dose from radioactive materials that are present in the worker's environment.

- Radiation sources in buildings.
- Radioactive materials in storage areas and waste pits.
- Radioactive materials on the ground and on other surfaces.

This dose is measured at several locations on the site.

Occupational Environmental Dose (Cont.)

- Internal radiation dose
 - Calculate the amount of radioactive material taken into the body from the concentration in air.
 - Calculate the dose to specific organs.
- External radiation dose
 - Calculate the dose to the whole body from radiation sources outside of the body.
 - Calculate the dose to specific organs.

Occupational Environmental Dose (Cont.)

- The TBD provides instructions for reconstructing doses.
- This environmental dose is not included in the worker's DOE dose record.

Occupational Internal Dosimetry

- Methods and practices
- Sources of exposure
- Minimum detectable activity (MDA) for:
 - Whole Body Counting
 - Urinalysis
- Reporting levels
- Instructions for reconstructing dose

Internal Dosimetry (Cont.)

- The bioassay program started in 1951.
- In-building air monitoring records are available beginning in 1952.
- Urine was tested for uranium.
- X- and gamma-emitting materials were measured in the body using a whole body counter beginning in 1968.

Occupational External Dosimetry

- Methods and practices
- Sources of exposure
- Adjustments to recorded dose
- Minimum detectable levels (MDLs)
- Instructions for reconstructing dose

External Dosimetry

- Dosimeter technology
Beta, X and gamma rays –
1951 to present
- Calibration procedures
- Exchange frequency
- Workplace radiation fields
- Exposure geometry

In Conclusion

- Developing a usable Site Profile is an important task.
- Site Profiles are “living” documents.
- Additional information is being sought and will be used when it adds to the document.
- Send comments directly to NIOSH (addresses follow).

Sending Comments to NIOSH on Site Profile Documents

- NIOSH welcomes comments from all interested stakeholders (organized labor groups, worker advocacy groups, claimants, etc.) on the Site Profile documents.
- Please include the name of the site, the title of the document, and the Site Profile number (ORAUT-TKBS-0017) when submitting comments.

Sending Comments to NIOSH on Site Profile Documents

Send all comments to:

Department of Health and Human Services
National Institute for Occupational
Safety and Health (NIOSH)

Robert A. Taft Laboratories MS-C34
4676 Columbia Parkway

Cincinnati, OH 45226

Fax: (513) 533-8230

email: siteprofile@cdc.gov

NIOSH Website

You can find information about the NIOSH Office of Compensation Analysis and Support (OCAS) and the EEOICPA at their website <http://www.cdc.gov/niosh/ocas/>.